

[002] This application claims priority from German Application Serial ◆◆
 No. 103 02 258.9 filed January 22, 2003. ◆◆

[003] FIELD OF THE INVENTION ❖

[005] BACKGROUND OF THE INVENTION

[015] ~~———— The solution of this problem results from the features of the main claim~~ ◆◆
~~while advantageous developments and improvements of the invention can be~~ ◆◆
~~understood from the sub-claims.~~ ◆◆

[016] SUMMARY OF THE INVENTION

[022] BRIEF DESCRIPTION OF THE DRAWINGS 

[023] ~~———— A description of a drawing is accompanied for better understanding of the structure of the inventive transmission and of its interaction with a previously applied for but not pre-published mechanical conversion device for an H shifting device. In the drawing: The invention will now be described, by way of example,~~ with reference to the accompanying drawings in which:

[026] DETAILED DESCRIPTION OF THE INVENTION

[028] The gear wheels 6, 11 form the ratio step for a second transmission gear G2; the gear wheels 7, 12 for a fourth transmission gear G4; the gear wheels 8, 13 for a third gear G3; the gear wheels 9, 14 for a first transmission gear G1; the gear wheels 7, 18 for a sixth transmission gear G6 and the gear wheels 10, 19 for a fifth transmission gear G5. In this way, departing from the input side (clutch 4) of the transmission, there results the gear sequence G2, and reverse gear RG; G4 and G6; G3, G1 and G5. An axially very compact structure

is achieved here by virtue of the double utilization of the fixed gear 7 for driving the gear wheels 12, 18 for the fourth transmission gear G4 and the sixth transmission gear G6.

[032] Upon one countershaft 16 is, in addition, located a coupling device 32 with which the idler gear 19 of the fifth transmission gear G5 can be connected with the second countershaft 16.

[033] The output of the first and second countershafts 15, 16 results via fixed gears 24, 26 which are fastened upon said countershafts. At the same time, the fixed gear 26 of the countershaft 16 meshes directly with an output fixed gear 27 upon a transmission output shaft 28, shown here axially offset, while the fixed gear 24 upon the other countershaft 15 is also directly in tooth contact via its output toothing 25 with said output fixed gear ~~[[wheel]]~~ 27 upon the transmission output shaft 28.

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Reference numerals

1 selector transmission	28 transmission output shaft	
2 internal combustion engine	29 coupling device	
3 crankshaft	30 coupling device	
4 starting and separating clutch	31 coupling device	
5 transmission input shaft	32 coupling device	
6 fixed gear	50 transmission shift device	
7 fixed gear	51 shifting gate	
8 fixed gear	52 shift lever	
9 fixed gear	53 first shift shaft	
10 fixed gear	54 second shift shaft	
11 idler gear	55 shifting gate	
12 idler gear	56 gear wheel	
13 idler gear	57 gear wheel	
14 idler gear	58 selector gate	
15 first countershaft	59 shift finger	
16 second countershaft	60 shift finger	
17 <u>reverse</u> idler gear	❖ 61 shift finger	
18 idler gear	62 recess	
19 idler gear	63 recess	
20 reverse gear input toothing	64 selector bar	❖
21 fixed gear	<u>G1 first transmission gear</u>	❖
22 reverse <u>gear</u> shaft	❖ <u>G2 second transmission gear</u>	❖
23 fixed gear	<u>G3 third transmission gear</u>	❖
24 fixed gear	<u>G4 fourth transmission gear</u>	❖
25 output toothing	<u>G5 fifth transmission gear</u>	❖
26 fixed gear	<u>G6 sixth transmission gear</u>	❖
27 fixed gear	<u>RG reverse gear</u>	❖

1-7. (CANCELED)

8. (NEW) A selector transmission (1) for a motor vehicle in which two transmission shift positions located in a shifting gate (55) of a H or multi-H transmission device (50) can respectively be shifted by means of two different shifting sets, the transmission comprising;

an transmission input shaft (5) connected with an output side of one of a starting and separating clutch (4),

a plurality of fixed gears (6, 7, 8, 9, 10) situated on the transmission input shaft (5), meshing with idler gears that point away from said clutch (4), are lined up in a sequence of a second transmission gear (G2) and a reverse gear (RG), a fourth transmission gear (G4) and a sixth transmission gear (G6), a third transmission gear (G3), a first transmission gear (G1) and a fifth transmission gear (G5),

a first countershaft (15) and a second countershaft (16) are situated paraxially with said transmission input shaft (5),

a plurality of idler gears (11,12, 13, 14) upon said first countershaft (15) pointing away from said clutch (4) are consecutively lined up for the second transmission gear (G2), the fourth transmission gear (G4), the third transmission gear (G3) and for the first transmission gear (G1),

a second plurality of idler gears (17, 18, 19) upon the second countershaft (16) pointing away from said clutch (4) are consecutively lined up for the reverse gear (RG), the sixth transmission gear (G6) and for the fifth transmission gear (G5), that between first and second idler gears (11, 12) for the second transmission gear (G2) and the fourth transmission gear (G4), a first shifting set (29) is situated, between third and fourth idler gears (13, 14) for the third transmission gear (G3) and the first transmission gear (G1) one second shifting set (30) is situated and between seventh and eighth idler gears (17, 18) for the reverse gear (RG) and the sixth transmission gear (G6) a third shifting set (31) is situated,

a fourth shifting set (32) for coupling a first fixed gear (9) for the fifth transmission gear (G5) with said second countershaft (16),

a second fixed gear (21) upon a reverse gear shaft (22) meshes with the first fixed gear (9) upon said transmission input shaft (5), upon said reverse gear shaft (22) a third fixed gear (23) is situated which drives said reverse idler gear (17) upon said second countershaft (16) and that upon each one of said first and second

countershafts (15, 16) one or more additional fixed gear (24, 26) is fastened which meshes with one output fixed gear (27) upon a transmission output shaft (28).

9. (NEW) The selector transmission according to claim 8, wherein each one of said first, second, third, and fourth shifting sets (29, 30, 31, 32) comprises sliding sleeves axially movable upon the respective first and second countershafts (15, 16) but non-rotatably connected therewith and synchronizer rings situated to the right and left thereof.

10. (NEW) The selector transmission according to claim 8, wherein the end of said transmission output shaft (28) pointing to one of a differential or transfer transmission is disposed essentially in an area of said starting and separating clutch (4).

11. (NEW) The selector transmission according to claim 9, wherein said one or more additional fixed gears (24, 26) are situated on an end pointing to the starting and separating clutch (4) of both first and second countershafts (15, 16).

12. (NEW) The selector transmission according to claim 8, wherein said sliding sleeves of said first, second, third, and fourth shifting sets (29, 30, 31, 32) are actuatable by means of a setting device actuatable either manually or with servo-assistance.

13. (NEW) The selector transmission according to claim 12, wherein said setting devices actuatable with servo assistance have piston-cylinder systems which are operated by means of one of a hydraulic or pneumatic pressure medium.

14. (NEW) The selector transmission according to claim 8, wherein said setting device actuatable either manually or with servo assistance comprises one mechanical conversion device which converts a shift lever movement in the shifting gate of an H or multi-H shifting gate from one gear position to the next gear position (G1-G2; G3-G4; G5-G6) into actuation movements for two of the first, second, third, and fourth shifting sets (29, 30, 31, 32) in said transmission (1).